Kennedy NASA Procedural Requirements

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Responsible Office: **Safety and Mission Assurance**

KSC Quality Assurance Procedural Requirements

National Aeronautics and Space Administration

John F. Kennedy Space Center

KDP-KSC-T-2120, Rev. Basic

Change Log

Date	Revision	Description
4/3/09	A	Revision A is a major revision of all sections of this document.
1/10/14	B	Revision B of this KNPR is a major revision to the John F. Kennedy Space Center (KSC) or "Center" Quality Assurance requirements. Previous versions of this KNPR repeated information from Federal and (NASA) Agency Quality Assurance (QA) requirements and contained procedural information. This revision of the KNPR now states only the portion of a complete set of QA requirements (Federal, Agency and Center) scoped for KSC.
12/3/18	B-1	This document has been extended three months to allow for assessment of Agency's NPR update and KSC impact; Center wide review, comment disposition, and processing of final signatures. Revision B-1 contains administrative revisions to comply with NPR 1400.1, NASA Directives and Charters Procedural Requirements.
4/10/19	B-2	Extension approved for review, rewrite, and alignment of KNPR with upcoming revision to NPR 8735.2, Management of Government Quality Assurance Functions for NASA Contracts.
12/3/19	C	This revision of the KNPR was updated to match the numbering changes made to ISO 9001 / AS9100. Audit requirements for documented procedures for internal audits, quality manual, and control of nonconforming products were added.

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PREFACE

P.1 PURPOSE

This KNPR provides Center-level, KSC-specific Quality Assurance (QA) requirements. These requirements build on the Federal and Agency QA requirements in the Federal Acquisition Regulation (FAR), NASA FAR Supplement, NASA Policy Directives (NPD), and NASA Procedural Requirements (NPR).

P.2 APPLICABILITY

a. This KNPR is applicable to all NASA KSC and NASA KSC contractor organizations who are subject to policies or contracts requiring Quality Management System (QMS) Plans in compliance with ISO 9001 or AS 9100. The Center QA requirements contained herein are complimentary to ISO 9001 or AS 9100.

b. In the event of a conflict between the requirements set forth in this document and:

(1) Agency requirements, the more stringent requirements take precedence.

(2) Program/Project requirements, the Program/Project requirements take precedence.

(3) Existing contract provisions, the contract provisions take precedence.

(4) Other documents at an equivalent level (e.g., other KNPR documents), the respective Offices of Primary Responsibility will resolve the conflict on a case-by-case basis and provide appropriate guidance.

c. If disagreement exists regarding which of the aforementioned documents takes precedence, the NASA KSC Director, Safety and Mission Assurance (S&MA) will make the final determination.

d. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required, “will” denotes expected outcome, and “are/is” denotes descriptive material.

e. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

P.3 AUTHORITY

a. NPD 8730.5, NASA Quality Assurance Program Policy

b. NPR 8735.2, Management of Government Quality Assurance Functions for NASA Contracts

P.4 APPLICABLE DOCUMENTS AND FORMS

a. KNPD 8700.1, KSC Safety and Mission Assurance Policy Directive

b. KNPR 8715.3-1, KSC Safety Procedural Requirements, Volume 1: Safety Procedural Requirements for Civil Servants/NASA Contractors

c. KNPR 8730.1, KSC Metrology and Calibration Procedural Requirements

d. NASA-STD-8736.6, Implementation Requirements for NASA Workmanship Standards

e. NASA-STD-8739.12, Metrology and Calibration

f. ANSI/ESD S2020, Protection of Electrical and Electronic Parts, Assemblies and Equipment

g. ISO 9001 – 2015, Quality Management Systems Requirements

h. AS 9100D, Quality Management Systems – Requirements for Aviation, Space and Defense Organizations

i. AS 9101, Quality Management Systems Audit Requirements for Aviation, Space, and Defense Organizations,

P.5 MEASUREMENT/VERIFICATION

a. Implementation of this KNPR by KSC Programs/Projects and institutional organizations is subject to periodic surveillance (audit, assessment, or other) by the NASA KSC S&MA.

b. Implementation of this KNPR by support organizations (i.e., NASA contractors and partners) will be subject to periodic surveillance (audit, assessment, or other) by the NASA KSC S&MA Programs/Projects and institutional divisions.

P.6 CANCELLATION

This document cancels KNPR 8730.2, Rev B-2, Quality Assurance Procedural Requirements.

/original signed by/

Jennifer C. Kunz
Director, Safety and Mission Assurance

Distribution: TechDoc Library

CHAPTER 1: GENERAL

1.1 GOAL

The goal of this document is to provide requirements that minimize the risk of NASA KSC product and service nonconformities.

1.2 OBJECTIVE

The objective of this KNPR is to provide the Center-specific QA requirements.

1.3 RESPONSIBILITY

a. Final authority and responsibility for implementing NASA QA requirements at KSC rests with the Center Director (CD). The CD has delegated the responsibility for assessing and ensuring compliance with S&MA requirements at KSC to the NASA KSC S&MA Director. KSC Programs/Projects and directorate organizations have responsibility for implementing the QA requirements with support from S&MA. These responsibilities and those assigned to other Center organizational elements are set forth in detail in Kennedy NASA Policy Directive (KNPD) 8700.1, KSC Safety and Mission Assurance Policy Directive.

b. Ownership of this KNPR resides with S&MA Institutional Division. The interpretation of the requirements in this KNPR is the responsibility of the S&MA Institutional Division with the appropriate SMA organizations that support the Program/Project and directorates. The NASA KSC Director, S&MA is the final authority for interpretation of these requirements.

1.4 REQUEST FOR RELIEF FROM SAFETY AND MISSION ASSURANCE TECHNICAL AUTHORITY REQUIREMENTS

NASA KSC Programs/Projects and directorates shall request relief from Center, Agency, or Federal QA requirements in compliance with KNPR 8715.3-1, Chapter 2: Requests for Relief from S&MA Technical Authority (TA) Requirements.

Note: Contractors seeking relief from contract quality requirements will work through their assigned Contracting Officer (CO).

1.5 DOCUMENT ORGANIZATION

Given the applicability of existing QMS standards (ISO 9001-2000, ISO 9001-2008, AS 9100B, or AS 9100C) at KSC, this KNPR is organized using the same headings and numbering as those standards.

CHAPTER 2: CENTER QUALITY REQUIREMENTS

NASA quality assurance and engineering personnel are responsible for supporting programs and projects by advising and assisting contractors, suppliers, and KSC personnel in the proper and effective implementation of Agency and KSC quality requirements. Effective implementation includes establishing a system that ensures each design, process engineering, and quality control requirement is addressed.

2.1 SCOPE

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.2 NORMATIVE REFERENCES

Additional QA documentation is in P.3 Authority and P.4 Applicable Documents and Forms.

2.3 TERMS AND DEFINITIONS

Additional QA terms and definitions are in Appendix A.

2.4 CONTEXT OF THE ORGANIZATION

All elements of an organization's QMS shall remain readily available for evaluation.

2.4.1 Understanding the Organization and Its Content

The contractor shall:

a. Ensure all QA personnel have the relevant experience, qualifications, certifications, and specialized training to perform QA inspections prior to work being performed.

b. Submit a Corrective Action Plan to resolve government audit/assessment findings on the Contractor's QMS to the Government's satisfaction within three months of the release of the findings.

2.4.2 Understanding the Needs and Expectations of Interested Parties

The contractor shall:

a. Plan and conduct product assurance actions including inspections, tests, and records review, which demonstrate contract, drawing, and specification requirements have been met on all articles and materials produced or procured for NASA.

b. Identify potential constraints and risks related to hazards and critical items.

c. Present identified constraints and risks to the program risk review board or engineering review board.

d. Coordinate and communicate risks to affected Government organizations and other KSC contractors.

e. Provide NASA S&MA personnel or authorized contractor representative access to the sites or areas where work under the contract is being performed in order to conduct inspections, audits, assessments, or surveillance activities to determine the adequacy of the quality programs.

f. Collect and compile data and information to demonstrate that the products and services delivered to the Government are in compliance with requirements and specifications.

2.4.3 Determining the Scope of the Quality Management System

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.4.4 Quality Management System and Its Processes

The contractor shall prepare and annually update a Quality Manual which compiles the QMS into a single source of documented information which reflects the sequence and interaction of QMS processes that includes:

a. The scope of the quality management system.

b. Description of the methodologies, metrics and leading indicators used to measure the effectiveness of the QMS.

c. Description of the management controls that will used to ensure the compliance with requirements.

d. The documented procedures established for the quality management system, or reference to them.

e. A description of the interaction between the processes of the quality management system.

2.5 LEADERSHIP

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.6 PLANNING

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.7 SUPPORT

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.8 OPERATION

2.8.1 Operational Planning and Control

a. Support for the development of Government Quality Assurance Surveillance Plans (QASP), which include the Program QASPs, is an essential function of Government QA. NASA KSC QA advises on or develops the QASP, documenting all resources necessary for an effective measurement of Program/Project, contractor and non-contractor compliance to Program/Project or contract requirements.

b. The government, through a QASP, shall communicate planned government inspections, government mandatory inspection points (GMIP), government tests, or other government types of in-process (production or assembly) verification with Program/Projects, contractors, and partners through the use of the product assurance section.

Note: Concurring personnel may include CO, Contracting Officer's Representatives (COR), or Program/Project Managers.

c. The contractor shall:

(1) Assess potential sources of supply to determine the risk of receiving nonauthentic parts.

Note: Original Component Manufacturers (OCM), OCM-authorized suppliers (e.g., franchised distributors), and authorized aftermarket manufacturers are considered to have low risk of supplying nonauthentic parts.

(2) Mitigate risks of procuring counterfeit parts from sources other than OCMs or authorized suppliers.

(3) Participate in the Government-Industry Data Exchange Program (GIDEP) and NASA Advisory prescreening prior to executing a procurement and for monitoring emerging crosscutting quality issues with acquired products.

(4) Comply with NASA-STD-8739.12 for measures affecting safety and mission success.

(5) Comply with NASA-STD-8739.6 for workmanship standards for mission critical items and critical Ground Support Equipment (GSE).

2.8.2 Requirements for Products and Services

Contractors under design contract with NASA KSC shall determine and document critical and complex attributes of the design so that NASA can determine planned government in-process inspection/verification of product.

2.8.3 Design and Development of Products and Services

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.8.4 Control of Externally Provided Processes, Products and Services

a. All organizations shall develop and maintain a preplanned schedule of supplier audits and QMS evaluations.

b. Delegations of contract authority from procurement, contracting, sourcing, or purchasing organizations shall be documented and controlled as records and made available to customers and suppliers.

2.8.5 Production and Service Provision

The Contractor shall supervise, direct, and control the quality of products and services provided to the Government and ensure products and services procured meet the applicable quality requirements.

2.8.5.1 Control of Production and Service Provision

a. All organizations managing or providing services in spaceflight processing and aviation processing areas shall implement a tool control program to include, at a minimum, the following elements:

(1) Tool tether use for Spaceflight Processing.

(2) Traceability, storage locations, and user accountability.

(3) Search, control, and management functions for tools when designated storage locations exhibit missing tools.

(4) Security and location of designated tool containers.

(5) Prescribed intervals of tool inventories to be performed.

(6) The documentation of tools entering flight elements and verification of tools removed from flight elements for Spaceflight Processing.

(7) Tool transfer and loan controlling documentation for Spaceflight Processing.

(8) Tool cleanliness.

Note: Center tool control requirements to mitigate potential hazards to personnel are addressed in KNPR 8715.3-1, KSC Safety Procedural Requirements, Volume 1: Safety Procedural Requirements for Civil Servants/NASA Contractors. Center tool control requirements for calibration and measurement are found in KNPR 8730.1, KSC Metrology and Calibration Procedural Requirements.

b. Personnel or organizations working in spaceflight processing and aviation processing areas where tool control programs are already in place shall comply with the existing tool control program or implement their own tool control program to address the elements in item a, above.

2.8.5.2 Identification and Traceability

a. A configuration management process shall be established that will ensure product identification is maintained throughout the product life to include the ability to trace components to the assembly or next higher assembly as required.

b. Responsible organizations managing acceptance authority media shall document a control plan that:

(1) Creates records of annual validations of personnel who use acceptance authority media.

(2) Differentiates acceptance authority media from government and other contractor record authorizations.

Note: Contractor acceptance authority cannot exhibit the designation "NASA" or abbreviations of any NASA installation.

(3) Restricts the issuance or reissuance of retired, lost, worn, or damaged acceptance authority media.

c. Record drawings (also known as as-built drawings), acceptance documentation, inspection records, receiving reports, voice, video, photographic, or other records used as unique identification shall be controlled by the organization's QMS.

2.8.5.3 Property Belonging to Customers or External Providers

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.8.6 Release of Products or Services

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.8.7 Control of Nonconforming Outputs

The Contractor shall:

a. Track all problem and failure histories, document corrective actions, and report problems and failures using a Problem Reporting and Corrective Action (PRACA) system accessible and useable by NASA and NASA-designated personnel.

b. Document nonconforming products and noncompliances, including products from suppliers, vendors, and subcontractors.

c. Notify NASA S&MA personnel of nonconforming products or failures that affect safety, reliability, or functionality.

d. Document and track government-discovered nonconformities in PRACA system.

e. Establish a procedure to define the controls and related responsibilities and authorities for dealing with nonconforming product and services, including activities for the identification, segregation, disposition, and disposal.

f. Evaluate nonconforming products or services through corrective action investigations and take action to eliminate the causes of nonconformities in order to prevent recurrence and escalate the investigation to the appropriate technical authority or board for the review and disposition.

g. Ensure corrective actions are appropriate to the effects of the nonconformities encountered.

h. Establish a procedure to define requirements for:

(1) Reviewing nonconformities (including customer complaints).

(2) Determining the causes of nonconformities.

(3) Evaluating the need for action to ensure that nonconformities do not recur.

(4) Determining and implementing action needed.

(5) Records of the results of action taken.

(6) Reviewing the effectiveness of the corrective action taken.

(7) Flowing down corrective action requirements to a supplier when it is determined that the supplier is responsible for the nonconformity.

(8) Specific actions where timely and/or effective corrective actions are not achieved.

(9) Determining if additional nonconforming product exists based on the causes of the nonconformities and taking further action when required.

i. Implement preventative actions appropriate to the effects of the potential problems to eliminate the causes of potential nonconformities in order to prevent their occurrence.

j. Establish a procedure to define requirements for:

(1) Determining potential nonconformities and their causes.

(2) Evaluating the need for action to prevent occurrence of nonconformities.

(3) Determining and implementing action needed.

(4) Records of results of action taken.

(5) Review the effectiveness of the preventive action taken.

(6) Capture and publish Lessions Learned.

k. Identify actions to disposition product and service nonconformities.

Note: The following terms are commonly used to disposition product nonconformities: Use-as-is (accept), repair (accept with condition), rework (accept with condition), return-to-supplier (reject), and scrap (reject).

(1) Scrap dispositions shall require that nonconforming products are conspicuously and permanently marked, or positively controlled until physically rendered unusable.

(2) Use-as-is or repair dispositions shall be approved by the organization (or its delegated representative) responsible for design and contract requirements.

l. Maintain records of nonconforming products that are legible, traceable to the applicable product, identifiable to the applicable requirement, and readily retrievable for requirement verification.

m. Maintain records of corrective and preventative actions, and make those records available to the Government.

2.9 PERFORMANCE EVALUATION

2.9.1 Monitoring, Measurement, Analysis, and Evaluation

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

2.9.2 Internal Audit

a. A documented procedure shall be established to define the responsibilities and requirements for planning and conducting audits, establishing records and reporting results.

b. Records of the audits and their results shall be maintained.

2.10 IMPROVEMENT [CORRECTIVE ACTION AND PREVENTIVE ACTION]

This section of the KNPR provides no Center-specific S&MA QA requirements for organizations following a QMS standard (e.g., ISO 9001, AS 9100).

APPENDIX A: DEFINITIONS

Complex - A product that has quality characteristics not wholly visible in the end item, for which contract conformance cannot be determined through inspection, measurement, and/or test of the end item, and for which conformance can only be established progressively through the item's life by precise measurements, tests, and controls applied. Examples of complex items include assemblies, machinery, equipment, subsystems, systems, and platforms.

Contracting Officer (CO) - A person with the authority to enter into, administer, and/or terminate contracts and make related determinations and findings.

Contracting Officer Representative (COR) – A person that perform duties/responsibilities designated by the CO, as stated in the COR Designation Letter. A COR has no authority to make any commitments or changes that affect price, quality, quantity, delivery, or other terms and conditions of the contract, nor in any way direct the contractor to operate in conflict with the contract terms and conditions.

Critical - The condition where failure to comply with prescribed contract requirements can potentially result in loss of life, serious personal injury, loss of mission, or loss of a significant mission resource. Common uses of the term include critical work, critical processes, critical attributes, and critical items. (NPR 8735.2)

Customer - Owners of statements of work, specifications, and data requirements on associated product.

Responsible Organization - Contractually obligated to authorize control decisions over product being supplied to the government.

Repair - A procedure that makes a nonconforming item acceptable for use. The purpose of the repair is to reduce the effect of the nonconformance. Repair is distinguished from rework in that characteristics after repair still do not completely conform to the applicable drawings, specifications, or contract requirements.

Rework - A procedure applied to a nonconforming item that completely eliminates the nonconformance and results in a characteristic that conforms completely to the drawings, specifications, or contract requirements.

Use as Is - Acceptance of the nonconformance without repair or rework.

APPENDIX B: ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
CD	Center Director
CO	Contracting Officer
COR	Contracting Officer's Representative
ESD	Electrostatic Discharge
FAR	Federal Acquisition Regulation
GIDEP	Government-Industry Data Exchange Program
GMIP	Government Mandatory Inspection Points
GSE	Ground Support Equipment
ISO	International Organization for Standardization
KNPD	Kennedy NASA Policy Directive
KNPR	Kennedy NASA Procedural Requirements
KSC	John F. Kennedy Space Center
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
OCM	Original Component Manufacturers
PRACA	Problem Reporting and Corrective Action
QA	Quality Assurance
QASP	Quality Assurance Surveillance Plan
QMS	Quality Management System
S&MA	NASA KSC Safety and Mission Assurance Directorate
TA	Technical Authority